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Attorneys for Debtors and Reorganized Debtors

**UNITED STATES BANKRUPTCY COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION**

In re:

PG&E CORPORATION,

- and -

**PACIFIC GAS AND ELECTRIC
COMPANY,**

Debtors.

- ☐ Affects PG&E Corporation
☐ Affects Pacific Gas and Electric Company
☒ Affects both Debtors

** All papers shall be filed in the Lead Case, No.
19-30088 (DM).*

Bankruptcy Case No. 19-30088 (DM)

Chapter 11

(Lead Case) (Jointly Administered)

**DECLARATION OF JOHN RAINES IN
SUPPORT OF PG&E'S MEMORANDUM
OF POINTS AND AUTHORITIES IN
OPPOSITION TO CLAIMANT'S SECOND
MOTION FOR PARTIAL SUMMARY
JUDGMENT**

Date: December 19 2023

Time: 10:00 a.m. (Pacific Time)

Place: (Tele/Videoconference Only)

United States Bankruptcy Court
Courtroom 17, 16th Floor
San Francisco, CA 94102

DECLARATION OF JOHN RAINES

I, John Raines, declare as follows:

1. I am a Transmission Line Design Engineer for Pacific Gas and Electric Company (PG&E). I received a Bachelor's degree in Mechanical Engineering from the University of Pittsburgh in 2018. I am also currently enrolled in Gonzaga University's Graduate Engineering Transmission and Distribution Degree program, which is a graduate engineering degree program that is focused entirely on the engineering design processes needed to design high voltage electrical grids.

2. I have been employed in different engineering roles since 2018, working almost entirely in the power industry. I began working at PG&E in March, 2020 where I worked as a Field Engineer. Among my duties as a Field Engineer were to work with Estimators and PG&E's Mapping Department to update the GIS mapping system and LiDAR records to reflect recent work completed by construction crews and to correct any mapping errors found in the field. In January, 2023 I was employed as a Transmission Line Design Engineer where my duties included the design of transmission lines, largely through 3D modeling software that uses LiDAR taken from the field as data for modeling existing structures and lines in the field. I have completed PG&E's PLS-CADD Bootcamp which extensively trains engineers in the use of LiDAR data to accurately predict line heights and characteristics.

3. I have personal knowledge of the facts set forth herein and can and do competently testify regarding the facts set forth in this declaration.

4. My current responsibilities including checking ground clearance heights on existing structures and on future designs, designing new configurations (such as removing/moving poles or stringing new kinds of conductor with different sag characteristics), preparing structure check sheets (data sheets containing basic data about tower loads, span lengths, conductor characteristics, etc), among other technical duties.

1 5. In the course of my work I use LiDAR to plot the locations of various
2 structures, including but not limited to transmission towers, transmission lines, and
3 related structures.

4 6. LiDAR is an acronym for Light Detection and Ranging. LiDAR works
5 similarly to a radar system by sending out signals and recording the reflection of the signal
6 off objects to determine the object's distance from the sensor. LiDAR works by scattering
7 thousands of laser points out from the LiDAR array. A sensor then detects where those
8 laser points strike and records the distance and angle from the LiDAR array to establish
9 the location of the laser point reflection in 3-D space. The LiDAR can then use GPS data
10 to assign highly accurate GPS coordinates to the location of the laser reflection. By
11 showering a landscape with hundreds of thousands to millions of laser flashes, a LiDAR
12 system can create an accurate 3-D profile of a landscape and overlay that data over known
13 GPS grids. This system is considered the gold standard in mapping terrain details for 3-
14 D modeling and is used in systems as varied as autonomous vehicles, robotic navigation,
15 mapping bridges and architectural features such as powerline towers, and even satellite
16 weather tracking. Just about any system that seeks to establish a 3-D model of a real-
17 world terrain will rely on LiDAR, and LiDAR has been shown to be accurate to a range
18 of 0.5-10mm depending on the precision of the equipment and the distance of the object
19 being scanned.

20 7. Within PG&E, LiDAR is used to develop a 3D simulation of PG&E's
21 powerlines and surrounding trees and brush to determine in there may be potential
22 encroachments near facilities that could require safety improvements or maintenance.

23 8. LiDAR is reliable and accurate and has been used for over 40 years by
24 engineers and scientists to measure and plot distances between objects.

25 9. I have compared LiDAR scans kept and maintained in the ordinary course
26 of business relating to the Transmission Towers on the Transition Station and the
27 Transmission Lines that extend from the Transition Station over the Komir Property.
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1 10. The data I prepared was taken from PG&E's records of LiDAR scans. I
2 used a LiDAR scan taken in 2012 as the "before" circuit and modeled transmission lines
3 in PLS-CADD to follow the scanned LiDAR points. This is the same technique we use
4 when designing and modifying transmission lines, and PLS-CADD is known to
5 accurately predict line sage to within inches of field conditions.

6 11. I then took measurements from the modeled transmission line to the
7 ground. I repeated this process for LiDAR scans that were taken in 2022. I then compared
8 the position of the towers, the conductor attachment points, and the ground clearance as
9 it was scanned in 2012 and 2022. Again, these are the same techniques and processes I
10 would use if I were designing a new line or modifying an existing line.

11 12. Attached hereto as Exhibit A are LiDAR scans that compare the height
12 and location of the 2012 Transmission Lines with the 2022 Transmission Lines.

13 13. In 2018, the Transmission Towers within the PG&E Transition Station
14 were reconstructed within the same alignment. The reconstruction project replaced six
15 towers with three replacement towers, designated towers 06/52, 005/039 and 005/039.
16 Each replacement tower supports a double circuit of 115 kV lines. The replacement
17 towers were placed between 10 to 20 feet south of their original locations, within the
18 PG&E Transition Station. From the Transition Station the Transmission Lines extend
19 south approximately 724.6 feet to the existing towers located south of the Komir Property.
20 The towers located south of the Komir Property have not reconstructed and remain in
21 their same locations with the same attachment points. A comparison of the alignment of
22 the Transmission Lines from 2012 and 2018 is shown in Exhibits A-1 and A-2. Based
23 on the LiDAR data I have determined there has been virtually no change in the alignment
24 of the Transmission Lines as it extends across the Komir Property.

25 14. Based on the LiDAR data I prepared graphics that compare the height of
26 the Transmission Lines from 2012 and 2018, which are attached in Exhibits A-3 and A-
27 4. As shown on these exhibits, each Transmission Line has three phases, known as a A
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1 phase, B phase and C phase, with the lowest set of conductors is the C phase. The values
2 identified in Exhibits A-3 and A-4 refer to the lowest set of conductors. In addition, the
3 values identified represent when the Transmission Line would be operating at its highest
4 operating temperature of 392°F, under which conditions the lines would sag to their
5 lowest point. Although the Transmission Lines would operate at such high temperatures
6 infrequently, during periods when electrical load on the lines is at its maximum allowable
7 level, it's under these conditions that the Transmission Lines would have maximum sag
8 and the lowest ground clearance. Based on the LiDAR data I have determined that there
9 would be a change in height of the ground clearance of Transmission Lines along a
10 distance of 304.3 feet from the south fence on the PG&E property line. The change in
11 the conductor would vary along this segment, from 4.9' at the northern property boundary
12 and tapering down to a point where there is no change in the height of the conductor at
13 the point north of the flood control channel 304.3 feet south of the north tower 6/52 on
14 the San Mateo-Martin #3 & #4. The lowest point of the Transmission Lines over the
15 Komir Property in 2012 was 33.9 feet, which remained unchanged in 2022. At 304.3 feet
16 south of the PG&E south fence onward, over the north end of the flood control channel
17 and beyond, the height of the conductor in 2022 was increased over the remaining
18 southern portion of the Komir Property.

19 15. This data was prepared from data taken from the westernmost circuit,
20 called San Mateo-Martin 3&4. I attest that I have reviewed the data for the circuits on the
21 two other towers and have found the data to be materially similar with no significant
22 differences from the data taken from San Mateo-Martin 3&4 presented here.

23 16. PG&E maintains engineering drawings of its towers and transmission
24 circuits in the regular course of business. Its PG&E's business practice to reference any
25 modifications to the towers and circuits that may be made over the course of time by
26 identifying such modifications in revision notes that appear at the bottom of the drawing.
27 The revision notes reflect the dates the modifications were made and a general description
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1 of the work. I have reviewed the drawings relating to the Transmission Lines over the
2 Komir Property. PG&E's drawings indicate that the Transmission Lines over the Komir
3 Property have remained in this general alignment since at least 1989. An excerpt of
4 PG&E's Drawing No. 229394, which depict the circuits known as Martin-SF Airport and
5 San Mateo-Martin No. 6, is attached as Exhibit A-5. This drawing is dated 06/30/1989
6 and Revision Note No. 2 is dated 07/10/90, which dates have been highlighted on the
7 excerpt. The 2018 reconstruction work described above is identified in Revision Note
8 No. 8. PG&E's drawings for the other two tower lines are dated 9/20/72 (Drawing No.
9 217643) and 07/11/1989 (Drawing No. 229404) and also indicate these circuits remained
10 in the same general alignment since these dates.

11
12 I declare under penalty of perjury under the laws of the United States that the
13 foregoing is true and correct.

14 Executed this 3rd day of November 2023 at Oakland, California.

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16 By: _____
17 John Raines
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